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ABSTRACT

Differential diagnosis of delayed language development in the preschool child at the Readiness Nursery of the New York University Medical School can be shown by three case histories. Diagnosis requires identification of factors involved in the origin and development of the child's language deficit both at the time of diagnosis and at the critical ages for language imprinting. Richard, 3 years 11 months, suffered severe malnutrition and maternal deprivation during the first three years of life due to a mother who was an alcoholic and drug addict. Therapy involved residence in a foster home, a language development program and planned experiences with other children. Kathy, 3 years 2 months, was diagnosed as a case of cerebral injury at 18 months causing verbal expression limited to single words and hyperkinetic behavior. Therapy stressed siezure control, language retraining, and psychiatric help for the family. Romona, 3 years 8 months and the 9th of 11 children, showed poor verbal comprehension, single word speech, and poor fine motor coordination. The child was diagnosed as suffering from a complex of genetic abnormality, prematurity, and chaotic early sensory stimulation. Therapy stressed spatial orientation, fine motor coordination and visual motor functioning, auditory sequencing, and language stimulation. At 5 years of age Romona's behavior approached a normal level. All cases at the Readiness Nursery are evaluated and remediated via an interdisciplinary approach. (DB)

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THE READINESS NURSERY IN A MEDICAL SCHOOL

By Archie A. Silver, M.D.

For presentation at
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THE READINESS NURSERY IN A MEDICAL SCHOOL*

by Archie A. Silver, M.D.**

This paper will attempt to illustrate the type of problems referred to the Readiness Nursery at New York University Medical School, the nature of the interdisciplinary diagnostic process, and the use of this diagnosis in the educational management. The differential diagnosis of delayed language development in the preschool child really requires an assessment of the factors involved in the origin and development of language: "An assessment of the influence of the sensory, cultural, and emotional environment of the child, of his biologic capacity, of his reaction to his intrinsic and extrinsic environment, all not only in the present but also at the critical ages for the imprinting of language." (Silver, Pfeiffer, and Hagin, 1967)

Our approach to those problems will be illustrated by the evaluation of three children: One with severe malnutrition and maternal deprivation in his first three years of life; the second, a girl with clear-cut left cerebral injury occurring at 18

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months of age; and finally, a child with a complex of genetic abnormality, prematurity, and chaotic early sensory stimulation.

Richard

Richard was 3 years, 11 months of age when he was referred to our Nursery by the Bureau of Child Welfare because of his lack of speech and because of his generally retarded development.

At our initial examination he was a small little boy as round as he was tall, with large glasses, appearing no larger than a two year old. He was a round ball of motor activity, darting about, grasping and quickly discarding toys, avoiding physical contact, anxious on any disturbance of equilibrium, screaming at the slightest frustration. His legs and arms appeared short for his body, his palms were broad, his thumbs small. He was well aware of the examiner, however, relating to offered food and to toys. He would not usually attend verbal commands, although it was clear his hearing was adequate and that he understood simple commands. His vocalizations were unintelligible sounds, and there was an occasional offering of names of objects in English and in Spanish. His play was unstructured; perseveration was not noted.

Aside from his small size and habitus, his speech no higher than 2 years, and his poor impulse control, his clinical neurological examination was grossly normal, with a right hand preference, good fine motor coordination and praxis, normal muscle tone and postural responses, normal autonomic response.

Formal psychological testing was, of course, difficult because of his distractibility. On the Leiter Performance Scale he attained his highest score of 81, with a basal of year II. On the Stanford-Binet, however, he scored an IQ of 83. He again based at year II. At II, 6 he could identify objects by use and could identify parts of the body. He could copy a circle at year 3, and build a bridge of three blocks. He could not pass any tests at the 3 1/2 year level.

On the Zimmerman Preschool Language Scale, he had an auditory comprehension age of 2 years, 10 months, verbal ability at 2 years, 3 months, with an average language age computed at 2 years, 6 months, approximately 1 1/2 years below his chronological age.

Endocrine work-up when Richard was 3 years, 6 months of age revealed no specific abnormality except a bone age approximately one year below his chronological age.

His was a generalized retardation not only in the higher cortical functions but also in overall growth and development. From the time he was 3 years old, approximately one year before we saw him, he had been living with a foster mother. He was brought to her by his own mother, an alcoholic and a drug addict, who said she was going crazy and simply left him with this neighbor, who lived in the same building in which Richard was born. He was then almost 3 years of age and weighed about 19 pounds. He was not toilet trained, ate only from a bottle, and did not speak.

His first three years were chaotic. He was born at home in an unassisted delivery, then brought to the hospital with possi-

ble sepsis. His only other contact with medical help was at age 1 year, when he had a fractured leg. From his first to his third year, his mother apparently drifted about with no home, inadequate diet, and inadequate care. At the time he was brought to his foster mother, his mother had been sleeping in the streets. No father was ever available.

At present he is under the care of the Bureau of Child Welfare and remaining with his foster mother.

Our impression was that Richard was suffering from the effects of severe nutritional defects experienced during the first few years of his life combined with a syndrome of maternal deprivation. Although we did not find evidence of a structural defect of the central nervous system, the long-lasting effect of nutritional defect had to be considered. Further, his impulsive behavior, inadequate identification, and little anxiety aroused concern for his ability to form identifications and to develop a restraining superego.

Our therapeutic approach was designed to deal with each of these considerations. His language development was to be enhanced by a program of gradual exposure to language, with verbalization in play situations, with the development of basic perceptual skills, with word-naming exercises. Identification with his peers and with teachers was encouraged by imitation. His sessions were to be structured and consistent with limits clearly set. His foster mother was included in group therapy sessions.

It is now four months since he has been in the Nursery. He is able to join in the group activities; he knows the names of the children, is aware of their activity, and asks about them when they are absent. He speaks English, uses language more spontaneously, is learning the names of objects, of colors, and of shapes. He responds well to one-to-one relationships; his ability to control his impulses is improving. He now seems to be a happy child.

We feel that the Nursery program is demonstrating this child's capacity to respond and is reversing the deficits of his early years. It may well be that the critical ages for language development may extend into the third year of life.

Kathy

In the summer of 1972 when Kathy was 3 years, 2 months of age, she was referred to us because of her hyperactivity, negativism, and retarded speech.

On our initial examination she was a pretty, petite child, tanned and healthy-looking with golden curls and big blue eyes. She was cheerful and smiling, coming to the examiner without hesitation and spontaneously kissing him, but immediately becoming physically clinging and even physically tenacious. Her play with dolls was disorganized, unpatterned, her selection of the dolls apparently haphazard, her inspection of them cursory. Her verbal comprehension appeared to be at her age level, but her verbal expression was limited to single words with an arti-

culation defect. She can, however, make herself understood by gesture. Upon frustration she becomes restless, even hyperactive, throwing toys about, particularly the mother doll.

On physical examination her most obvious defect is a right hemiparesis involving primarily the right upper extremity, which she guards, using it only when necessary. Muscle tone, power, and coordination is decreased on that side. There is also a partial right central facial paresis. Tongue and palatal movements, however, are adequately performed. The right pupil is smaller than the left. Deep reflexes appeared decreased but equal bilaterally. There were no pathological reflexes and no dyskinesia. With her left hand she could draw a circle, could use crayons, and could draw a person scoring at about 3 years, 6 months. She refused to attempt these tasks with her right hand. There is questionable impaired cortical sensation in the right hand. She can identify colors, can count to ten. A major problem was her inability to name objects--for example, on the picture vocabulary portion of the Stanford-Binet, she was only able to name four of the 18 items. It was not possible to establish a basal age in the Stanford-Binet because she could not complete all the subtests at year II. If asked to identify an object by pointing, Kathy can do so. If asked to name it, she cannot or at least uses incorrect words to do so. For example, she can identify a bed, a dog, a key, but she cannot name these objects; she can illustrate their use by gesture.

During formal psychometric testing her attention span was short and her retention very selective.

We have then an alert child of potentially good intelligence, hyperkinetic, short attention span with a major problem in word finding and expressive speech and in motor power and coordination in the right hand.

Her past history revealed normal birth, growth, and development until the age of 18 months, when she developed a hemophilus influenza meningitis, during which she was comotose for about two weeks, in septic shock, and developed a right hemiparesis. Upon recovery from the acute episode, her speech, which before her illness had been normal, regressed to random vocalization. She became aggressive and hyperkinetic and developed convulsive seizures, during which she becomes flushed; her arms and hands stiffen; and her eyes turn to the right. She has been on phenobarbital, dilantin, and mysoline without noticeable effect. Dexidrine for hyperkinetic behavior was also given before her referral to our Nursery.

Her family is intact with one sibling, a girl, one year older than Kathy. Her parents are both college graduates; the mother concerned and frustrated over Kathy's injury, not knowing just where to set limits and where to be permissive. She has an undercurrent of resentment against fate, against the doctors, and against Kathy. Her father, more resigned, attempted to solve the problems by suppression but withal was more accepting and consistent in his management.

Our task was a multiple one. On the organic side, the control of seizures without perceptual depression was imperative. Educationally, she needed language retraining for an associative and amissive aphasia, gratification in relationships with other children and in play, the development of mechanisms other than temper outbursts to solve frustration, and the encouragement in use of the right hand as an assisting hand. Regressive behavior was to be permitted as needed. Psychiatrically, the family, particularly her mother, needed help in understanding Kathy's difficulties, in their management, and in the resolution of the mother's own guilt and anger. This is a challenging child, involving as it does damage to the last hemisphere in a right-handed child, with paresis of the right upper extremity great enough to impair any fine motor coordination (i.e., writing) in that arm. It was decided to attempt to train the right hemisphere for graphic execution and use the right arm as an assisting arm.

While progress is being made in language retraining and in overall behavior, Kathy needs the additional year our Nursery can offer.

Ramona

Ramona was first seen in the Nursery on June 1, 1971, when she was 3 years, 8 months of age. She comes from a long line of children with learning problems; the ninth of eleven children, five of whom ranging in age from 5 years to 11 years were evaluated by us in a local public school where we were studying and

treating children with cognitive defects. Thanks to the Readiness Nursery we were able to study and work with Romona long before she reached grade school age.

Her initial appearance was similar to that of her next older siblings--a small, pale, timid child--clinging to her mother, her hair hanging down over her eyes, her dress clean and brightly colored. She was, without much difficulty, induced to loosen her hold on her mother and reach for doll house and furniture. Her play was perseverative and contained little overt fantasy except for spontaneous spanking of the male doll. She did relate to the examiner, however, was not at all autistic. She was able to perceive the Gestalt of picture puzzles and sustained attention and motivation to complete the puzzle at a 4 year level. Her visual discrimination and her visual recall appeared at about her age level. Visual motor coordination, however, was no higher than 3 years. Auditory discrimination appeared within the normal range. Verbal comprehension, however, appeared no higher than at a 3 year level. Her emissive speech was clear but limited in quantity, laconic single words instead of sentences; she could not name parts of the body. Her naming of common objects was at about a 2 1/2 to 3 year level. Neurologically, her gross appearance was not exceptional except for a small head circumference (19 inches), the suggestion of epicanthal folds bilaterally, and the bridge of the nose depressed. Her gross motor coordination was normal; her fine motor coordination, however, was awkward. Muscle tone appeared decreased; reflexes were normal except for a persistent tonic-neck reflex bilaterally.

Vision, hearing, and tongue movement were normal. Right-left discrimination was not yet attained. She preferred her left hand in fine motor activity.

Because of the presence of epicanthal folds, dermatoglyphic study was done. Abnormality was found in three aspects of this study: a low ridge count, a broad palm with slightly high ATD angle, and unusual hypothenar patterns. Chromosome study (peripheral blood), however, was normal. Study of urine and blood for abnormal metabolites revealed on two occasions an unknown ultraviolet absorbing substance.

The Zimmerman preschool language scale done at age 4 years and 2 months confirmed a mild retardation in auditory comprehension and the greater retardation in the verbal expressive area, with AC level at 86 (basal age at 3 years) and VA level at 80 (basal age at 2 years, 6 months).

Our initial evaluation then revealed a child with deficits in fine motor coordination, in visual motor functions, and in auditory perception, particularly in the associational and expressive aspects of language. There was evidence from dermatoglyphic study that this could well be a subtle genetic defect; and neurological examination further revealed gross immaturity in reflex pattern and evidence of a cerebral defect with small head circumference.

The story, however, is more complicated. This was a premature child born in the sixth month of pregnancy, following 24 hours of bleeding. She was a hand-head presentation delivered

in an unsterile field with an APGAR of 6 at 1 minute. Birth weight was 3 1/2 pounds. Her neonatal period was characterized by periods of apnoea and by myoclonic convulsions with repeated hyperbilirubinemia. Her developmental landmarks were grossly normal except for delay in expressive speech. The pregnancy was difficult with her mother asthmatic, taking ephedrine, theophylline, and steroid during the pregnancy.

The family of 11 children and parents live in a four-room apartment. The father works as a stock manager in a grocery store. He is volatile, physically striking the children, particularly the girls; arguments between parents result in his leaving the house for the night. In spite of this, there is a degree of order and control in the household, perhaps too much insistence on quiet and lack of verbal exchange.

In spite of the chaotic events of her birth and the organic and genetic findings, it was felt that this child should be worked with in the Nursery. It was recognized that her response would be slow. Her training was to emphasize four areas: spatial orientation, fine motor coordination and visual motor functioning, auditory sequencing, and language stimulation.

Now at age 5 years, Romona scored an IQ of 89 on the Stanford-Binet and an IQ of 105 on the Leiter performance scale. Behaviorally and linguistically, this child is approaching a normal level. This fall she will enter kindergarten of the public school in which we have an intensive treatment program for children with cognitive defects. We anticipate that she will require at least

another year of specific language training; and if her response in the Nursery is an index, we anticipate that she will learn to read.

Summary

In summary, this paper has attempted to illustrate the severity of the problems we have taken into our Nursery, the interdisciplinary study involving medical, psychological, educational and social work disciplines, and how these studies are combined to understand and treat the child. We have not hesitated to work with severe maternal deprivation, retarded intellectual functioning, structural defects of the central nervous system, and even with subtle genetic defects. These factors are never seen in isolation but are part of the complex of biological and psychological factors in the development of language, each of which requires study for understanding the child and the formulation of appropriate treatment. The children I have described here suggest that with proper stimulation the effects of deficits even at critical ages may be overcome and that in the preschool age the human brain has great plasticity.